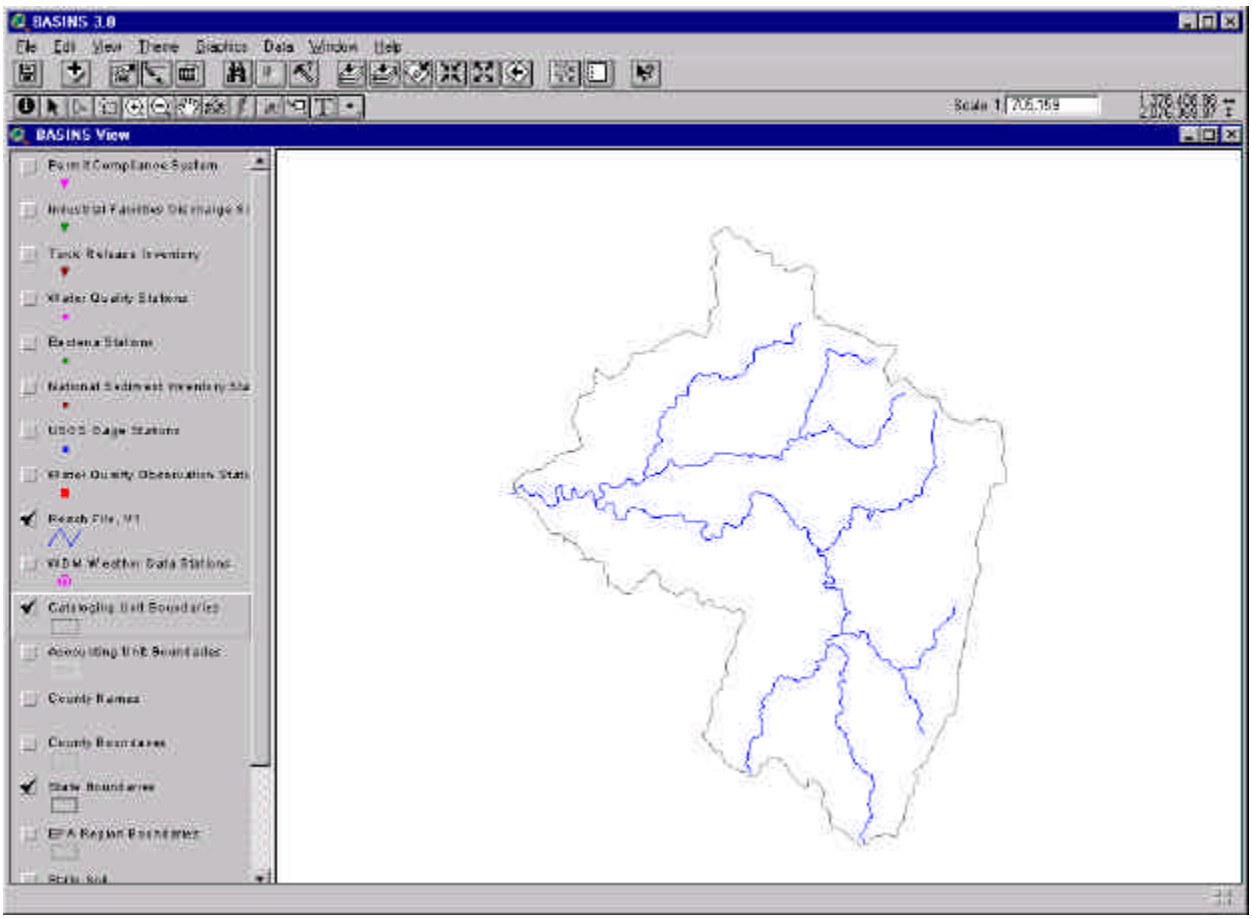
5 Basins Components - Extension Manager

BASINS Customized ArcView Interface

The BASINS customized ArcView Interface contains all of the menu, button, and tool bar items that are present in the standard ArcView interface. These standard components provide access to ArcView's data query, spatial analysis, and map generation tools. Other tools and menus specific to BASINS are activated through the *BASINS Extension Manager*. From the BASINS Extension Manager, a user may manage the active BASINS extensions for the current project. This extension manager is used to access a number of additional menus and tool bar items that execute BASINS Assessment Tools, BASINS Utilities, Watershed Characterization Reports, Instream Water Quality Models, and Watershed Models (HSPF and SWAT). The BASINS Customized ArcView Interface is displayed in Screen 5.1.



Screen 5.1

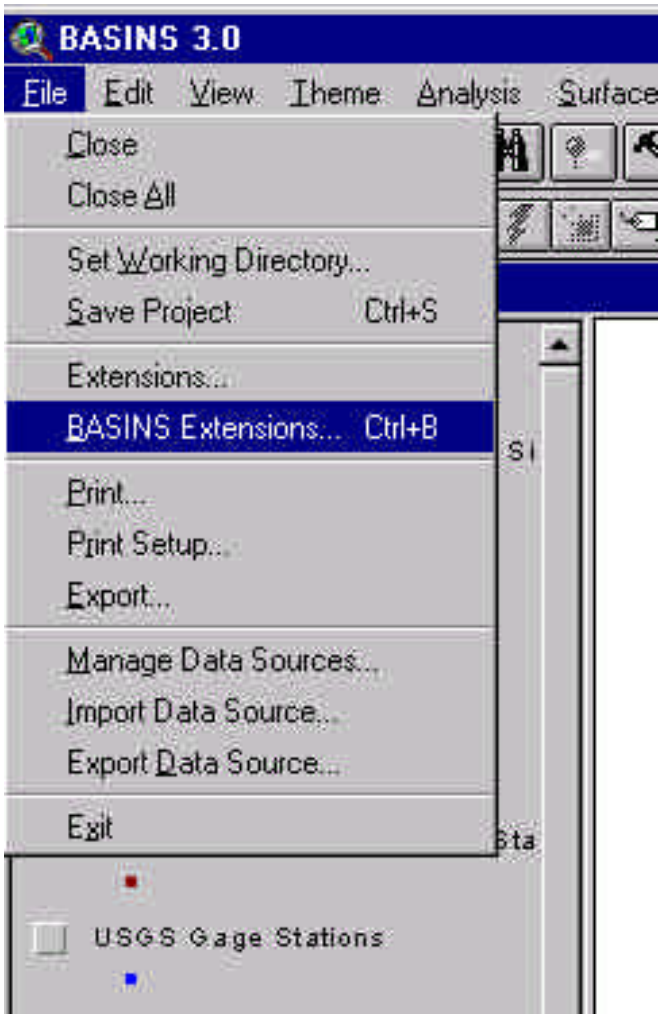
Standard ArcView Tool Bar Items

The following ArcView tool bar items are present in the BASINS Customized ArcView Interface. They are used throughout this manual. Use this section as a reference during execution of BASINS functions.

Save Project		Zoom In		Select Feature	
Theme Properties		Zoom Out		Zoom In	
Edit Legend		Zoom to Previous Extent		Zoom Out	
Open Theme Table		Select Features Using Graphic		Pan	
Find		Clear Selected Features		Measure	
Locate Address		Help		Hot Link	
Query Builder		Change Projection		Area of Interest	
Zoom to Full Extent		Identify		Label	
Zoom to Active Theme(s)		Pointer		Text	
Zoom to Selected		Vertex Edit		Draw Point	

BASINS Extension Manager

The BASINS Extension Manager is used to set which Basins Components are available in the current project. The extension manager is accessed through the File menu. See Screen 5.2.

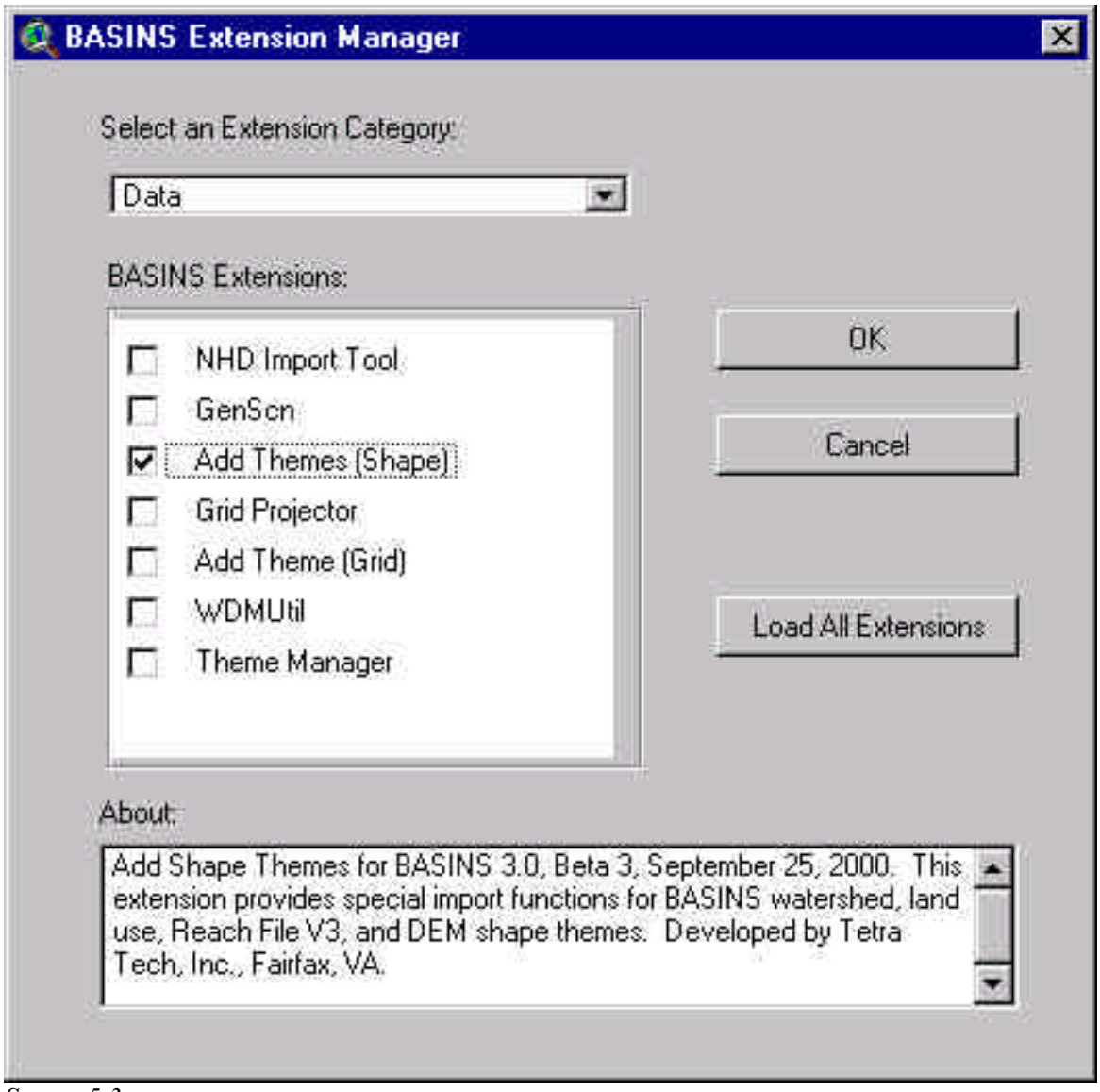


Screen 5.2

BASINS Extensions are grouped into the following categories by function:

- Assess - includes Target, Assess, and Data Mining
- Data - includes NHD Import Tool, Add Shape (Theme), Add Shape (Grid), Grid Projector, Theme Manager, GenScn , and WDMUtil
- Delineate - includes the Manual and Automatic Watershed Delineators
- Models - includes HSPF, SWAT, PLOAD, and QUAL2e
- Reports - includes Reports with Spatial Analyst, Reports without Spatial Analyst, and Lookup
- Utilities - includes Land Use and Soil Reclasify and Overlay, Water Quality Observation Utility, and DEM Reclassify

To activate an extension, choose the extension category from the drop-down list in the BASINS Extension Manager. Then use the check box next to the extension name to turn that extension on or off. See Screen 5.3



Screen 5.3

The *Load All Extensions* button may be used to turn all BASINS extensions on at once. Once all extensions have been set as desired, the user may click the *OK* button to close the extension manager. The menu structure in the BASINS ArcView interface will be updated to reflect the active extensions.

BASINS Assessment Tools

The BASINS Assessment Tools consist of three geographically based tools *TARGET*, *ASSESS*, and *Data Mining*. These tools can be used to assess in-stream water quality conditions and point source discharges at the regional, watershed, and stream segment levels.

TARGET is accessed from the Target menu and provides two options: Water Quality and Permitted Discharges.

ASSESS is accessed from the Assess menu and provides the same options as *TARGET*, Water Quality and Permitted Discharges.

Data Mining is executed by selecting the *Data Mining* tool bar item  . This tool is only available when either the PCS, Water Quality Stations, or Bacteria Station Theme is active.

Data Extensions

Several BASINS extensions have been developed to assist with data management. The data management tools are used to update existing data or to add additional local or regional data to supplement or replace BASINS data products. The comprehensive data products included in BASINS were developed based on nationally available information and are suited for large-scale assessments. When dealing with localized small-basin analysis, however, higher-resolution data might be necessary to effectively capture the site-specific feature variability.

The Data Extension category also includes extensions to run GenScn and WDMUtil. GenScn facilitates the display and interpretation of timeseries data associated with model applications. WDMUtil is used to manage Watershed Data Management (WDM) files, which are used to store input and output timeseries data for the HSPF model.

Delineation Tools

The *Watershed Delineation* tools enable the user to define watershed boundaries at a level smaller than the 8-digit Cataloging Unit Boundary level. This function is executed by selecting the either the Manual or the Automatic Delineation option from the *Delineate* menu.

BASINS Utilities

The BASINS Utilities provide the user with the ability to reclassify land use data, overlay land use and soils data, manipulate water quality observation data, and reclassify DEM data.

Land Use, Soils Class and Overlay is used to combine land use and soils themes for creating unique land-soil segments within each subwatershed.

Land Use Reclassification enables the user to reclassify a land use coverage imported into BASINS. This function is accessed by selecting Re-classify Land Use from the Utility menu.

Water Quality Observation Station Management enables the user to access and manipulate water quality observation station information and data. The station management tools are accessed by selecting the the *Edit Water Quality Observation Station* submenu under the *Utilities* menu to launch the "Water Quality Observation Tools" toolbar. The Water Quality Observation Tools toolbar is composed of a set of station management tools for adding, moving, editing and deleting water quality observation stations along with appending data to the water quality observation stations.

DEM Reclassification enables the user to reclassify DEM polygon data to better represent a study area. This function is accessed through selection of Re-classify DEM from the Utility menu.

Watershed Characterization Reports

Watershed Characterization Reports assist in summarizing key watershed information. A number of reports can be developed to inventory and characterize both point and nonpoint sources at the watershed and subwatershed scale. *Watershed Characterization Reports* can be created by selecting Point Source Inventory Report, Water Quality Summary Report, Landuse Distribution Report, Landuse Distribution Report (Grid), Watershed Topographic Report, Watershed Topographic Report(Grid), Toxic Air Emission Report or State Soil Characteristic Report from the *Reports* menu.

Stream Water Quality Models

QUAL2E is the instream water quality model that can be executed from BASINS. The BASINS system develops the input files required to run this model. *QUAL2E* is a steady-state, one-dimensional receiving water quality model. It is accessed through selection of *QUAL2E* from the Models menu.

Watershed Models

Two Watershed-scale models are included with BASINS: HSPF and SWAT.

HSPF is a watershed model integrating both point and nonpoint sources. It is capable of simulating nonpoint source runoff and associated pollutant loadings, accounting for point source discharges, and performing flow and water quality routing through stream reaches and well-mixed reservoirs. It is executed through selection of *HSPF* from the Models menu.

The *Soil and Water Assessment Tool* (SWAT) is a physical based, watershed scale model that was developed to predict the impacts of land management practices on water, sediment and agricultural chemical yields in large complex watersheds with varying soils, land uses and management conditions over long periods of time. It is executed through selection of *SWAT* from the Models menu.

BASINS Data Products

The BASINS Version 3.0 system is distributed with several national, regional, and state-level data products. The data consist of base cartographic products (such as state and county boundaries) and environmental products (such as water quality monitoring and industrial facility locations). These data products are accessible within the BASINS system through Arcview standard mapping and analysis tools and through BASINS customized tools and models. Table 5.1 is a list of supported data products in BASINS Version 3.0, which also indicates data owners and reference web sites when available. The list is arranged so that it matches the default listing of data products in the table of contents of the BASINS View window. The name of the Arcview theme and related DBF tables are shown for each data product. The table also shows what models and tools are used to access the data product. Appendix A provides the definition of every attribute field within each data product. All BASINS2 data is documented using the Federal Geographic Data Committee (FGDC) metadata standard. A copy of the metadata can be obtained from http://www.epa.gov/ost/basins/metadata.htm.

Table 5.1 **BASINS Version 3.0 Data Products**

BASINS Data Product	Theme Name	File Name	Customized Models and Tools*
Permit Compliance System (PCS) Sites and Computed Annual Loadings Source: US Environmental Protection Agency (USEPA). Ref: http://www.epa.gov/enviro	Permit Compliance System	pcs3.dbf pcs3.shp pcs3.shx	Target, Assess, Data Mining, Point Source Inventory Report, HSPF, QUAL2E
Related Table Names:	Permitted Discharges Parameter Table	pcs3-prm.dbf [cu].dbf	
Industrial Facilities Discharge (IFD) Sites Source: USEPA	Industrial Facilities Discharge Sites	ifd.dbf ifd.shp ifd.shx	HSPF QUAL2E
Toxic Release Inventory (TRI) Sites and Pollutant Release Data Source: USEPA Ref: http://www.epa.gov/enviro	Toxic Release Inventory	tri.dbf tri.shp tri.shx	Toxic Air Emission Report
Related Table Names:	TRI Air Emission Data 1987 TRI Air Emission Data 1988 TRI Air Emission Data 1989 TRI Air Emission Data 1990 TRI Air Emission Data 1991 TRI Air Emission Data 1992 TRI Air Emission Data 1993 TRI Air Emission Data 1994 TRI Air Emission Data 1995 TRI Land Release Data 1987 TRI Land Release Data 1988 TRI Land Release Data 1989 TRI Land Release Data 1990 TRI Land Release Data 1991 TRI Land Release Data 1992 TRI Land Release Data 1993 TRI Land Release Data 1994 TRI Land Release Data 1995 TRI POTW Data 1991 TRI POTW Data 1992 TRI POTW Data 1993 TRI POTW Data 1994	tri_ai87 tri_ai88 tri_ai89 tri_ai90 tri_ai91 tri_ai92 tri_ai93 tri_ai94 tri_ai95 tri_lr87 tri_lr88 tri_lr89 tri_lr90 tri_lr91 tri_lr92 tri_lr93 tri_lr94 tri_lr95 tri_pw91 tri_pw92 tri_pw93 tri_pw94	

	TRI POTW Data 1995 TRI Underground Injection Data 1987 TRI Underground Injection Data 1988 TRI Underground Injection Data 1989 TRI Underground Injection Data 1990 TRI Underground Injection Data 1991 TRI Underground Injection Data 1992 TRI Underground Injection Data 1993 TRI Underground Injection Data 1994 TRI Underground Injection Data 1995 TRI Water Discharge Data 1987 TRI Water Discharge Data 1988 TRI Water Discharge Data 1989 TRI Water Discharge Data 1990 TRI Water Discharge Data 1991 TRI Water Discharge Data 1992 TRI Water Discharge Data 1993 TRI Water Discharge Data 1994 TRI Water Discharge Data 1995 TRI Parameter Table	tri_pw95 tri_ui87 tri_ui88 tri_ui89 tri_ui90 tri_ui91 tri_ui92 tri_ui93 tri_ui94 tri_ui95 tri_wd87 tri_wd88 tri_wd89 tri_wd90 tri_wd91 tri_wd92 tri_wd93 tri_wd94 tri_wd95 tri_prm.dbf
Superfund National Priority List Sites Source: USEPA Ref: http://www.epa.gov/enviro	National Priority List Sites	cerclis.dbf cerclis.shp cerclis.shx
Resource Conservation and Recovery Information System	Hazardous and Solid Waste Sites	rcris.dbf rcris.shp

(RCRIS) Sites Source: USEPA Ref: http://www.epa.gov/enviro	Sites	rcris.shx	
Water Quality Monitoring Stations & Data Summaries Source: USEPA Ref: http://www.epa.gov/storet	Water Quality Stations	wq_stat.dbf wq_stat.shp wq_stat.shx	Target, Assess, Data Mining, Water Quality Summary Report
Related Table Names:	Water Quality Data 70-74 Water Quality Data 75-79 Water Quality Data 80-84 Water Quality Data 85-89 Water Quality Data 90-94 Water Quality Data 95-97 Water Quality Parameter Table	wq_d7074.dbf wq_d7579.dbf wq_d8084.dbf wq_d8589.dbf wq_d9094.dbf wq_d9597.dbf wq_parm.dbf	
Bacteria Monitoring Stations & Data Summaries Source: USEPA Ref: http://www.epa.gov/storet	Bacteria Stations	bac_stat.dbf bac_stat.shp bac_stat.shx	Data Mining
Related Table Names:	Bacteria Data 70-74 Bacteria Data 75-79 Bacteria Data 80-84 Bacteria Data 85-89 Bacteria Data 90-94 Bacteria Data 95-97 Bacteria Parameter Table	bc_d7074.dbf bc_d7579.dbf bc_d8084.dbf bc_d8589.dbf bc_d9094.dbf bc_d9597.dbf bc_parm.dbf	
National Sediment Inventory (NSI) Stations & Database Source: USEPA	National Sediment Inventory Stations	nsi.dbf nsi.shp nsi.shx	
Related Table Names:	NSI Biotoxicity Data NSI Tissue Residue Data NSI Reference Values NSI Sediment Chemistry Data NSI Watershed Summary Data	nsi_bio.dbf nsi_tis.dbf nsi_ref.dbf nsi_sed.dbf nsi_wsh.dbf	

Gage Sites Source: USEPA	USGS Gage Stations	gage.dbf gage.shp gage.shx	
Dam Locations Source: US Army Corps of Engineers (1996) Ref: http://www.nationalatlas.gov/atlasftp.html	Dam Locations	dam.dbf dam.shp dam.shx	
Reach File, Version 1 (RF1) Source: USEPA Ref: http://www.epa.gov/enviro/html/esdls/data_sets.html	Reach File, V1	rf1.dbf rf1.shp rf1.shx	All report tools, HSPF, QUAL2E
Weather Station Sites Source: National Oceanic and Atmospheric Administration (NOAA) Ref: http://www.ncdc.noaa.gov	Weather Station Sites Weather Station Area	metpt.dbf metpt.shp metpt.shx met_stat.dbf met_stat.shp met_stat.shx	
Drinking Water Supply (DWS) Sites Source: USEPA	Drinking Water Supply Sites	dws.dbf dws.shp dws.shx	
Watershed Data Stations & Database Source: NOAA Ref: http://www.ncdc.noaa.gov	WDM Weather Data Stations	wdm.dbf wdm.shp wdm.shx	HSPF
Hydrologic Unit Boundaries Source: US Geological Survey (USGS) Ref: http://www.nationalatlas.gov/hucsm.html	Cataloging Unit Code Cataloging Unit Boundaries Accounting Unit Boundaries	cat.dbf cat.shp cat.shx catpt.dbf catpt.shp catpt.shx acc.dbf acc.shp acc.shx	Data Extraction, Target, Assess, Data Mining, *Watershed Delineation*, all report tools, all utilities (except Lookup Tables), HSPF, QUAL2E
Major Roads Source: Federal Highway Administration Ref: http://www.nationalatlas.gov/	Major Roads	fhards.dbf fhards.shp fhards.shx	

roadsm.html			
Populated Place Locations Source: USGS	Place Names - (state postal abbreviation)	(ST)ppl.dbf (ST)ppl.shp (ST)ppl.shx	
Urbanized Areas Source: US Bureau of the Census Ref: http://www.nationalatlas.gov/urbanareasm.html	Urban Area Names Urban Area Boundaries	urban_nm.dbf urban_nm.shp urban_nm.shx urban.dbf urban.shp urban.shx	
State and County Boundaries Source: USGS Ref: http://www.nationalatlas.gov/countiesm.html	County Names Cunty Boundaries State Boundaries	cntypt.dbf cntypt.shp cntypt.shx cnty.dbf cnty.shp cnty.shx st.dbf st.shp st.shx	Extraction
EPA Regions Source: USEPA	Region Boundaries	epa_reg.dbf epa_reg.shp epa_reg.shx	report tools
EPA Ecoregions Source: USEPA Ref: http://nsdi.epa.gov/nsdi/projects/useco.html	Ecoregions (Level III)	ecoreg.dbf ecoreg.shp ecoreg.shx	
National Water Quality Assessment Study Unit Boundaries Source: USGS Ref: http://wwwrvares.er.usgs.gov/nawqa	NAWQA Study Unit Boundaries	nawqa.dbf nawqa.shp nawqa.shx	
Minerals Availability System/Mineral Industry Location (MAS/MILS) Source: US Bureau of Mines	Mineral Data	mines.dbf mines. shp mines.shx	
Water Quality Stations and Observation Data Source: USEPA	Water Quality Observation Stations	wqobs.dbf wqobs.shp wqobs.shx	Water Quality Management tools

Ref: http://www.epa.gov/storet		(cu).dbf wqobs_prm.dbf	
1996 Clean Water Needs Survey Source: USEPA	1996 Clean Water Needs Survey	1996cwns.dbf 1996cwns.shp 1996cwns.shx	
State Soil and Geographic (STATSGO) Database Source: USDA-NRCS Ref. http://www.ftw.nrcs.usda.gov/ stat_data.html	State Soil	statsgo.dbf statsgo.shp statsgo.shx	State Soil Characteristic Report
Related Table Names:	Soil Component Data Soil Layer Data	statsgoc.dbf statsgol.dbf	
Managed Area Database Source: National Aeronautics and Space Administration Ref: http://www.ncgia.ucsb.edu/sb/mod/mod.html	Managed Area Database	mad.dbf mad.shp mad.shx	
Classified Shellfish Areas Source: NOAA Ref: http://state-of-coast.noaa.gov	Classified Shellfish Areas	csa.dbf csa.shp csa.shx	
Land Use and Land Cover Souce: USGS Ref: http://nsdi.usgs.gov/nsdi/products/lulc.html	Land Use Index L_(USGS Quadrangle Name)	lulcndx.dbf lulcndx.shp lulcndx.shx l_(quad).dbf l_(quad).shp l_(quad).shx	Import Tool, Landuse Distribution Report, Landuse Re-classification, HSPF
Reach File Version 3 (RF3) Alpha Release Source: USEPA and Reach File Version 2.1 Source: USGS Ref: http://www.streamnet.org/pnwr/pnwrhome.html	Reach File, V3 (CU)	(cu).dbf (cu).shp (cu).shx	Import Tool, Watershed Reports, HSPF
Digital Elevation Map Source: USGS Ref: http://edcwww.cr.usgs.gov/ns	DEM (CU)	(cu).dbf (cu).shp (cu).shx	Import Tool, Watershed Topographic Report, DEM Re-

di/gendem.html			classification
Listing of Fish and Wildlife Advisories Source: USEPA			
Related Table Names:	Fish and Wildlife Advisory (1996)-Index Fish and Wildlife Advisory (1996)-Listing	lfwa96.dbf lfwa96ad.dbf	
Lookup Tables			Lookup Tables
Related Table Names:	Water Quality Criteria Table STORET Agency Codes Standard Industrial Classification Codes	wqcriter.dbf storetag.dbf sic.dbf	

* In addition to ArcView standard mapping and analysis tools